In The Claims:

Claims 1-14 are pending.

Claims 3, 4, 6 and 11 were previously cancelled.

Claims 12-14 were previously added.

Claims 1, 2, 5, and 7-10 were previously amended.

No claim amendments are made herein.

The status of the claims is as follows:

1.   (previously presented). A compact dual function random number generator and stream cipher generator comprising:

> a crypto-engine operable as either a random number generator or a stream cipher generator, and

> a controller controlling the crypto-engine to operate either as the random number generator or the stream cipher generator, including three muliplexers controlled by the controller to supply signals selectively to and receive signals from the crypto-engine, in which a first multiplexer is arranged to receive a random number generator seed signal and a stream cipher generator key signal, a second multiplexer is arranged to receive a dynamic synchronization signal and a constant synchronization signal, and a third multiplexer is arranged to receive an output signal from the crypto-engine and provide a random number output or a stream cipher output, respectively in each case.

2.   (previously presented). The compact dual function random number generator and stream cipher generator of claim 1, further including an XOR gate arranged to receive the stream cipher output from the third multiplexer and separate the stream cipher output into plaintext or ciphertext, such that the output of the XOR gate is in ciphertext or plaintext, respectively.

3.   (Cancelled).

4.   (Cancelled).

5.   (previously presented). The dual function generator of claim 12 in which the clipped hopfield neural network (CHNN) pairs comprises an input CHNN and a output CHNN and in which the input CHNN provides a nonlinear interaction with the dynamic or constant synchronization signal and the output CHNN provides a nonlinear interaction with an adjacent input CHNN output.

6.   (Cancelled).

7.   (previously presented). The dual function generator of claim 12 in which the clipped hopfield neural networks include neurons in one of two states; synaptic weights in one of three states; and a non-linear sign function.

8.   (previously presented). The dual function generator of claim 12 in which an input to each clipped hopfield neural network pair is arranged to converge to one of $2n+1$ stable states or attractors of the network after finite steps of iterations k.

9.   (previously presented). The dual function generator of claim 12 in which the clipped hopfield neural network is constructed using cascaded lookup tables of different attractor and input pairs.

10.   (previously presented). The dual function generator of claim 9 in which the lookup tables are associated with an initial synaptic weight matrix or a random selected permutated synaptic weight Matrix.

11.   (Cancelled).

12.   (previously presented). A dual function generator comprising:

a crypto-engine operable as either a random number generator or a stream cipher generator, including a randomizer and a non-linear manipulator in series, the randomizer having a plurality of clipped hopfield neural network pairs and the non-linear manipulator having at least one corresponding clipped hopfield neural network, and

a controller controlling the crypto-engine to operate either as the random number generator or the stream cipher generator, including three muliplexers controlled by the controller to supply signals selectively to and receive signals from the crypto-engine, in which a first multiplexer is arranged to receive a random number generator seed signal and a stream cipher generator key signal, a second multiplexer is arranged to receive a dynamic synchronization signal and a constant synchronization signal, and a third multiplexer is arranged to receive an output signal from the crypto-engine and provide a random number output or a stream cipher output, respectively in each case.

13.   (previously presented). The dual function generator of claim 12 including a decision box for selecting whether the dual function generator is operating as a random number generator or a stream cipher generator and an attractor mapping table connected to the decision box for providing encrypted/decrypted data when the dual function generator is operating as a stream cipher generator.

14.   (previously presented). The dual function generator of claim 7 in which the neurons states are 0 and 1; the synaptic weights states are -1, 0, and 1; and the non-linear sign function is 0, and 1.